to stable angina gives a promising rationale for a causative therapy. It also underscores the uniqueness of directional atherectomy combining luminal reconstruction with the option of a circumscript biopsy from the diseased vascular site.

3:15

898-6 Increased Intimal Thickening After Arterial Injury in Immune-deficient RAG-1 Knock-out Mice

S. Oguchi, J. Zhu, J. Yano, P. Dimayuga, P.K. Shah, B. Cercek. *Cedars, Sinai Medical Center and UCLA School of Medicine, Los Angeles, CA, USA*

We have previously shown that immunization to homologous LDL reduces neointimal thickening after balloon injury in hypercholesterolemic rabbits. In this study we investigated the effects of the immune system on intimal thickening after arterial injury in RAG (recombination activating gene)-1 deficient (−/−) mice. The arterial injury was induced by placing of a plastic cuff around the carotid artery. RAG-1 deficient mice have small lymphoid organs that do not contain mature B and T lymphocytes. Injury was induced in 15 B6/129 RAG-1 (−/−) mice and 14 normal B6/129 RAG-1 (+/+) mice. Animals were euthanized 21 days after cuff placement and intimal and medial areas were measured by computerized morphological image analysis. (Table)

	RAG-1 (+/+)	RAG-1 (−/−)
Intima (mm^2) No injury	0.0011 ± 0.001	0.0014 ± 0.002
Injury	0.0054 ± 0.0019*	0.0200 ± 0.160*
Media (mm^2) No injury	0.0233 ± 0.0059	0.0195 ± 0.0051
Injury	0.0182 ± 0.0071	0.0216 ± 0.011

*p < 0.01, ANOVA

Conclusion: arterial injury in immune-deficient RAG-1 knock-out mice induces more abundant intimal thickening compared to control mice. These data indicate that mature B and T lymphocytes may act to suppress the development of the intimal thickening after injury and atherosclerosis.

899 Cardiovascular Causes of Stroke

Wednesday, April 1, 1998, 2:00 p.m.–3:30 p.m.
Georgia World Congress Center, Room 256W

2:00

899-1 Much Higher Prevalence of Carotid Atheroma in a Developing African Country Than in Several Western Countries

F. Perret, P. Bovet[1], C. Shamlaye[1], F. Paccaud, L. Kappenberger. *Cardiology Division, CHUV, Lausanne, Switzerland; [1]Ministry of Health, Seychelles, Africa*

Background: an outbreak of cardiovascular diseases (CVD) is currently observed in developing countries. The specific determinants of this epidemic has to be better understood.

Methods: we conducted a country-wide survey of CV risk factors in Seychelles, an African country experiencing rapid economic development. Carotid atherosclerotic status was attested with high resolution ultrasonography in 503 randomly selected inhabitants (245 men) aged 25–64. Using same atheroma definition criteria, we compared carotid atheroma prevalence in Seychelles with that previously reported by others in several Western populations.

Results: as shown below, we systematically found a much higher prevalence of carotid atheroma in the Seychelles.

Western country	Subjects characteristics	Cut-off point for atheroma	Prevalence Western	Prevalence Seychelles
USA	men 65–69*	all lesions	68%	82%†
USA	women 65–69*	all lesions	54%	77%‡
Italy	men 40–49	1.0 mm thick	7%	71%‡
Italy	women 40–49	1.0 mm thick	4%	45%‡
France	women 45–54	1.75 mm thick	9%	21%†
Finland	men 42	20% stenosis	0%	13%‡
Finland	men 60	20% stenosis	5%	35%‡

†p < 0.05, ‡p < 0.001; *Seychelles group aged 55–64*

Conclusions: carotid atherosclerosis is much more frequent, severe and premature in this African developing country than in Western populations. This study provides a first systematic investigation of peripheral atherosclerosis in the population of a developing country.

2:15

899-2 Silent Cerebral Infarction in Apparently Normal Adults

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Background: Cerebrovascular disease is a major cause of mortality and disability in the adult population. Silent cerebral infarction (SCI) may lead to more severe cerebral infarctions or insidious progressive brain damage resulting in vascular dementia. The present study was designed to evaluate the prevalence and risk factors of SCI in apparently normal adult population.

Methods: 995 consecutive healthy adults (M/F = 831/164) who underwent brain MRI at our Health Promotion Center were assessed. All were neurologically free in history and physical examination.

Results: 58 out of 995 (5.82%) subjects revealed SCI. The prevalence was slightly higher in females (M:F = 5.7%:6.7%). There were 121 lesions altogether with 99 lesions smaller than 1 cm, 15 lesions between 1 cm and 2 cm, 3 lesions between 2 cm and 3 cm, and 4 lesions larger than 3 cm. The frequent sites of SCI were the basal ganglia, white matter, and cerebral cortex in order of declining frequency. Old age, hypertension, diabetes, and LVH were noted to be the risk factors of SCI on univariate analysis (all p < 0.05). However, multivariate analysis demonstrated old age, hypertension, serum total cholesterol and fibrinogen levels to be the independent risk factors of SCI.

Conclusion: SCI was found in 5.8% of our apparently normal adult population. Independent risk factors for SCI include age, blood pressure, serum total cholesterol and fibrinogen levels.

2:30

899-3 Frequency of Atrial Septal Aneurysm in Patients With Stroke

Y. Agmon, B.K. Khandheria, I. Meissner, J.P. Whisnant, J.D. Sicks, W.M. O'Fallon, J.L. Covalt, J.B. Seward. *Mayo Clinic, Rochester, MN, USA*

Background: An association between atrial septal aneurysm (ASA) and cardioembolic stroke has been suggested in previous studies. However, the frequency of ASA in the general nonselected population was not defined in these studies. The current study compares the frequency of ASA in selected patient populations and the general population.

Methods: 581 subjects (49.7% males), a random sample of the general Olmsted County population aged 45y and above, underwent transesophageal echocardiography (TEE), as part of the Stroke Prevention: Assessment of Risk in a Community (SPARC) study. The echocardiographic finding of ASA (defined as bulging of the region of the fossa ovalis, extending 15 mm or more beyond the plane of the interatrial septum) was compared between SPARC subjects and patients undergoing TEE at the Mayo Clinic during the same time period for various clinical indications: a) Search of a source of cerebral embolism (Stroke group, n = 1259); b) Other miscellaneous, non-embolic indications (Misc. group, n = 2203).

Results: The proportions (%) of subjects with ASA (number of subjects in each group in parenthesis) are presented in the table:

Age	45–54 y	55–64 y	65–74 y	75–84 y	>85 y
SPARC	0 (140)	0 (156)	3.5 (113)	0 (95)	3.9 (77)
Stroke	2.5 (159)	1.8 (272)	4.1 (460)	3.8 (317)	3.9 (51)
Misc.	2.5 (321)	1.4 (487)	1.9 (832)	0.8 (487)	1.3 (76)

Age and gender-adjusted odds ratios of ASA were 2.86 (95% confidence interval 1.28–6.41) for the Stroke group and 1.40 (0.62–3.16) for the Misc. group, compared to the SPARC cohort.

Conclusions: The frequency of ASA was higher in stroke patients than in non-stroke patients or the general population. However, the overall frequency of ASA in all study populations was low. These results suggest that ASA may constitute a risk factor for cerebral embolism in a small subgroup of stroke patients.

2:45

899-4 Frequency of Patent Foramen Ovale in Patients With Stroke

Y. Agmon, B.K. Khandheria, I. Meissner, J.P. Whisnant, J.D. Sicks, W.M. O'Fallon, J.L. Covalt, J.B. Seward. *Mayo Clinic, Rochester, MN, USA*

Background: An association between patent foramen ovale (PFO) and cardioembolic stroke has been suggested in previous studies. However, these studies lack a control group consisting of a general nonselected population. This study compares the frequency of PFO in selected patient populations and the general population.